Lesson 5.15: Upcycle Challenge Design Brief

Unit: Unit 5, Make It, Mend It, Wear It (Apparel and Textile Production and Design) **Topic:** 5.4 Upcycle Challenge project (day 1 of 6) **Grade:** 6 to 8 (written at grade 7; see Differentiation for the grade 6 support and grade 8 stretch) **Days:** 1 class period of 40 minutes (day 136) **Room:** FACS lab with the three work stations; no needles out today, so the tins stay closed and no count-out is needed

Standards

- NYS module line: NYS ATPD 2. Production d) Develop sustainability practices for repurposing apparel items
- NYS module line: NYS ATPD 4. Consumer Resources and Finance a) Compare and contrast the cost of constructing an apparel item versus purchasing one or repurposing one
- CTE theme line: CTE PSI 2. Design Process (Proactive) a) Implement a formal design process to solve a given problem by a. Defining the problem being addressed; b. Defining criteria that must be met through the finished design; c. Defining constraints that must be adhered to; d. Brainstorming and examining possible solutions
- CTE theme line: CTE SUS 1. Resources e) Investigate practices that promote stewardship of environmental resources
- NYS FACS Learning Standard 2 (Intermediate), Key Idea: Students will know the basic principles of home and community safety. They can demonstrate the skills necessary to maintain their homes and workplaces in a safe and comfortable condition. They can provide a safe and nurturing environment for themselves and others.; Performance Indicator: Students use age-appropriate techniques to select and maintain clothing.
- CDOS Standard 3a Universal Foundation Skills: Thinking Skills
- National FCS 3.0: 16.2.5 Show the right way to care for textile products and to dispose of or recycle them, keeping local and global needs in mind.
- National FCS 3.0: 2.2.3 Practice habits that conserve, reuse, and recycle so resources and the environment last.

Enduring understanding and essential question

Big idea: Upcycling is not throwing something away more politely. It is looking at a used thing and seeing what it could be worth more as. **Essential question:** What is in this scrap bin that somebody in this room would actually use?

Objectives

By the end of this lesson, students will be able to:

1. (Low) Define upcycling and distinguish it from recycling, with one clothing example of each.

2. (Mid) Given the four project constraints, analyze three ideas from the idea menu and explain for each whether it can be finished in two build days with two of the taught joins.
3. (High) Create a completed design brief that names the starting material, the finished item, the person who will use it, the two stitches, the order of work, and the one thing most likely to go wrong.

Vocabulary

Tier 2 (general academic): constraint, criteria, brief, feasible, scope Tier 3 (FACS): upcycle, recycle, repurpose, textile scrap, running stitch, backstitch, whipstitch, button stitch, seam allowance, reduced scope. See Vocabulary 05.md for Turkish, Portuguese, and Spanish.

Materials and setup

- The room scrap bin, pulled to the front and open, with at least twenty usable pieces: cut-up t-shirts, jeans legs, towel pieces, pillowcases, sweater sleeves, felt scraps, fabric remnants, old tote bags. *[Sal: start the bin on day 116, the first day of the unit, and put a sign on it. It should be full by today.]*
- Three finished examples the teacher made, or three photographs of them: a t-shirt tote with no sewing, a jeans-leg pencil case, and a sweater-sleeve phone sleeve. Hold them up; do not pass a stitched sample around until Lesson 5.16 or students will pick it apart.
- Handout 05.15 - Upcycle Design Brief and Idea Menu.md, one per student, printed double-sided: the idea menu with difficulty marks on the front, the design brief on the back
- The permission note, one per student, on the last page of Handout 05.15, to go home today
- Project 05 - Upcycle Challenge.md, one per student, and Rubric 05 - Upcycle Challenge.md, one per student. Both go out today so students design against the rubric.
- One measuring tape or ruler per station, for the size check on the brief
- Slides: Slides 05.15 - Upcycle Challenge Design Brief
- Setup notes: sort the scrap bin into three piles before class, shirts and knits, woven pieces (jeans, towels, pillowcases, shirting), and small scraps, so a student can find a material in 30 seconds instead of digging. Put a donation-drive bin by the door with a sign, if it is not there already. No needles, pins, or scissors out today; nothing gets cut until Lesson 5.16 after the plan is approved.

Pre-assessment

The do now is the pre-assessment: students sort four statements into upcycle, recycle, or neither. Watch for the common answer that cutting a shirt into rags is upcycling; rags are a downgrade, and the difference is the lesson's first point. Also collect the optional notes from Lesson 5.14's homework, the students who already have a material in mind, and use them as the first three ideas in Step 2.

LSA

Do now and hook (Time: 4 min)

On the board, four statements. Write U for upcycle, R for recycle, or N for neither.

1. A plastic bottle is melted down and made into new polyester thread.
2. A t-shirt with a stain is cut up and sewn into a tote bag that somebody carries to the store.
3. A sweatshirt is put in the trash.
4. A pair of jeans is cut into cleaning rags.

Two minutes. Take the answers (1 R, 2 U, 3 N, 4 is the argument: reused, yes, but it is worth less than it was, so most people call that downcycling). Name the rule on the board: "Recycling breaks a thing down to its material. Upcycling keeps the material and makes it worth more."

Hook: hold up a jeans leg from the bin. "This is trash right now. In three class periods one of you is going to be carrying pencils in it. Your job today is to decide what yours becomes."

Procedure

Step	Teacher will	Students will	Time
1. Direct instruction: upcycle, recycle, repurpose	Slides 2 to 4. Define all three with a clothing example each: recycle (a bottle becomes polyester thread; a shredded sweater becomes carpet padding), upcycle (a pillowcase becomes a drawstring bag somebody uses every day), repurpose (a towel becomes a produce bag, same material, new job). Connect to Lesson 5.14 directly: name which of the four moves this project is (pass it on, plus repair) and which card in the journey set it skips (the landfill card). State the cost point	Fill the three-definition box on the handout with one example each. Write one sentence: "This project skips the ___ card."	6 min

	from ATPD 4. a): the material was free, the thread costs pennies, so the finished item's cost is time and skill.		
2. The idea menu: ten paths	Slides 5 to 9, two or three ideas per slide with a picture description and the difficulty mark. Walk all ten fast, thirty seconds each, naming the starting material, the finished item, the stitches, and the one hard part: t-shirt to tote bag, no sewing (Easy); t-shirt to headband (Easy); sweater sleeve to phone sleeve (Easy); pillowcase to drawstring bag (Easy); fabric scraps to patchwork square (Easy); jeans leg to pencil case (Medium); shirt to pillow cover (Medium); towel to produce bag (Medium); socks to rice hand warmer (Medium); sweatshirt cuff to wristlet (Medium). Say out loud that Easy does not mean a lower grade; the rubric scores how well it is made and whether somebody would use it, not	Read the menu. Circle three ideas. For each, write whether the room's scrap bin has the material.	10 min

	how hard the idea was.		
3. The constraint set, and the rubric	Slides 10 and 11. Read the four constraints and post them on the wall: (1) it must start from a used textile, not new fabric off a roll; (2) it must be finished in two build days, Lesson 5.17; (3) it must use at least two of the taught joins (hand stitches or a machine seam), running stitch, backstitch, whipstitch, or sewing on a button; (4) it must be something somebody would actually use, and the brief has to name who. Then hand out Rubric 05 and read the five criteria out loud in one minute, pointing at the Meets column each time. Say the sentence that matters: “Nothing on this rubric is a surprise, and you can read it while you build.”	Check each of their three circled ideas against the four constraints and cross out any that fails, writing which constraint it failed. Keep the rubric out on the desk.	5 min
4. Write the design brief	Slide 12 (the brief, blown up, with one filled example). Release students to the scrap bin one station at a time,	Choose the material, measure it, and fill the brief: what I start with (what it is, its size in inches, the fiber if the label	10 min

	two minutes each, to find and hold a material. No cutting. Circulate and sign off nothing yet; today the brief only has to be complete, not approved. Ask each student the one question: “Who is going to use it?”	can be read, its condition), what it becomes, who will use it and for what, my two stitches, my tools, my three steps in order, the one thing most likely to go wrong, and my reduced-scope version if I run out of time.	
Closure	Slide 13. Closure task below. Hand out the permission note and the sourcing plan.	Write the closure line. Two students read. Take the permission note.	5 min

Day total: 4 (the do now) plus 6 plus 10 plus 5 plus 10 plus 5 = 40 minutes.

Total: 4 plus 6 plus 10 plus 5 plus 10 plus 5 = 40 minutes.

The sourcing plan (read aloud in the closure)

Three ways to get your material, and nobody is stuck:

1. **The room’s scrap bin.** Free, already here, and enough for the whole class. Anything in that bin is yours. This is the default; a student who brings nothing from home still builds a full project.
2. **The class donation drive.** The bin by the door takes clean, used textiles from anybody: t-shirts, towels, pillowcases, jeans, sweaters with holes, sheets. It runs from today through Lesson 5.16. Whatever comes in goes into the scrap bin for everyone.
3. **An item from home, with the permission note.** If you want to upcycle something of your own, take the note home, have the owner sign it, and bring both. No note, no cutting. The note is on the last page of Handout 05.15.

Nothing valuable, nothing borrowed, nothing that belongs to somebody who has not signed. Everything must be clean and dry. If a student brings something and then changes their mind about cutting it, the scrap bin is right there, and that is not a problem.

Questions to ask

Monitor understanding:

- Is that upcycling or recycling? What is the test?
- Which two stitches does your idea need, and can you do both?
- Who is going to use it, and for what?

- Does the scrap bin have your material, or are you waiting on something from home?

Deepen learning (why and how, tied to their lives):

- Your material was headed for the landfill. Does that make the finished thing worth more or less than one from a store, and to whom?
- Somebody will say “I could just buy a pencil case for three dollars.” What is your answer?
- Which of the ten ideas would somebody in your family actually use? Pick a person and answer for them.
- What is the difference between something that looks handmade and something that looks unfinished?

Check for understanding

The design brief itself is the check, collected at the bell and read before Lesson 5.16. Three yes-or-no questions per brief: does it name a used starting material with a measurement, does it name two of the taught joins, and does it name a person who will use it. A brief missing any of the three gets a one-minute conference at the start of Lesson 5.16 before planning begins. Also: during Step 3, hands up for “how many of you crossed out an idea for failing constraint 2, two build days?” A class where nobody crossed anything out has not read the constraints, so re-read constraint 2 with the jeans-to-backpack example that cannot be done in two days.

Closure (Time: 5 min)

One line on the bottom of the brief: "My item starts as ___ and becomes ___ for ___." Two students read theirs. Then the sourcing plan read aloud and the permission note handed out. Sort the briefs into “ready to plan” and “needs a one-minute conference” before day 137.

Differentiation and supports

- ELL: the idea menu has a picture description for every one of the ten paths, and the slides show each as a before and after; the brief can be completed as a labeled drawing instead of sentences (the picture plan template is on the back of Handout 05.15 and is a full-credit path, not a lesser one); sentence frames on the brief, “My item starts as ***," "It becomes a*** ," “___ will use it to ***," "I will use the*** stitch and the ___ stitch”; word bank with the Turkish, Portuguese, and Spanish words for cut, sew, fold, stitch, pocket, and bag, per Vocabulary 05.md.
- IEP and 504 (general): the picture plan template for any student who needs it; the reduced-scope version is written on the brief on day one, by the student, so nobody has to invent a fallback under pressure on build day; a pre-chosen material offered to any student who freezes at the bin (three pieces held back at the teacher’s desk, one knit, one woven, one felt); extended time to finish the brief in the first five minutes of Lesson 5.16; a printed copy of the four constraints taped to the desk.

- Grade 6 support: choose from the five Easy paths only, and the brief's steps are given as three printed steps to put in order rather than written from scratch. The material is chosen from the pre-sorted pile, not the whole bin.
- Grade 8 stretch: design a path that is not on the menu, with the teacher's approval, and write it up with the same four fields plus a sketch with measurements. Also answer one extra line on the brief: "What is the one measurement that, if I get it wrong, ruins this?" A stretch student may also write a two-line cost comparison, the cost of making it against the price of buying it, which is ATPD 4. a) directly.
- UDL checkpoint used: multiple means of engagement (ten paths at two difficulty levels, plus a design-your-own option, so every student has a real choice) and multiple means of action and expression (the brief as writing, as a labeled drawing, or dictated to the teacher).
- No-machine alternative: this whole project is hand sewing. Nothing in the ten paths needs a machine at any point. If machines exist in the room and a student asks, the answer is that the machine is the optional extension in Lesson 5.11 and the project is scored on hand stitches.

Assessment

Objective	Standards met	Learning task	Assessment (formative or summative; tool)
1. Define upcycling and distinguish it from recycling	ATPD 2. d); SUS 1. e); National FCS 16.2.5	The do now sort and the three-definition box, Step 1	Formative; do now checked for 3 of 4 correct and one example of each in the box
2. Analyze three ideas against the four constraints	PSI 2. a) b., c., d.; CDOS 3a Thinking Skills	The idea menu screen, Steps 2 and 3	Formative; handout checked for three ideas screened with the failing constraint named on any that was crossed out
3. Create a complete design brief	ATPD 2. d); ATPD 4. a); PSI 2. a) a., b., c.; National FCS 2.2.3; Std 2 PI C	The design brief, Step 4	Formative feeding summative; the brief is deliverable 1 of Project 05 and is scored on Rubric 05 criterion 1

The brief is the first deliverable of the Upcycle Challenge and is scored on Rubric 05 - Upcycle Challenge.md, criterion 1, at the end of Lesson 5.18.

Homework

Take the permission note home tonight if you want to use something of your own. Bring it signed by Lesson 5.16. If you are using the scrap bin, there is no homework.

Connections

Science and technology education: the design process in this lesson is the same one the technology teacher uses, define the problem, set criteria, set constraints, brainstorm, choose. Naming that out loud transfers it. Art: pattern, color, and composition on a patchwork square or a printed panel. Community: a local reuse shop, a maker space, or a library's fix-it program could take a photo set of the finished items, and a shop that gives fabric remnants for free is worth a phone call. *[Sal: name the fabric store you would ask for remnants; most give away bin scraps.]*

Sources

- NYS Middle Level CTE FACS Content Module 03, Apparel and Textile Production and Design (nyctecenter.org, June 2018), lines 2. d) and 4. a). Copy in 02 Standards/NYS Module PDFs/.
- NYS Middle Level CTE Theme Modules: Problem Solving and Innovation 2. a) a. to d.; Sustainability 1. e). Same folder. The Sustainability module's Family and Consumer Sciences illustrative activity names a recycle, upcycle, or repurposing project and gives recycling t-shirts into reusable shopping bags as its example, which is path 1 on the idea menu.
- NYS Learning Standards for Health, Physical Education, and Family and Consumer Sciences (1996), Standard 2, Intermediate, FACS strand. Wording per 02 Standards/STANDARDS SOURCES - web research.md, section 2. *[Sal: confirm against the NYSED PDF.]*
- National Standards for Family and Consumer Sciences Education 3.0 (LEAD FCS Education, 2018), competencies 16.2.5 and 2.2.3, per 02 Standards/STANDARDS SOURCES - web research.md, sections 4.2 and 4.16.
- Project 05 - Upcycle Challenge.md and Rubric 05 - Upcycle Challenge.md (same folder).

Teacher notes

- Start the scrap bin on day 116, not today. A bin that is full when students see it for the first time makes the whole project feel possible. A bin with four pieces in it makes twenty students fight over them.
- The three teacher-made examples do more work than any slide. Make them once, keep them forever, and hold them up rather than passing them around today. Students who handle a sample before they have a plan copy the sample.
- Common mistake: a student picks an idea their material cannot support, a pencil case from a knit t-shirt that stretches and curls. Catch it in Step 4 with one question, "Does your fabric stretch when you pull it sideways?" Knit stretches, woven does not, and pencil cases want woven.

- Second common mistake: the scope is too big. The jeans-into-a-backpack student is the one who ends up with nothing. Constraint 2 exists for that student, and the reduced-scope line on the brief is where you steer them: a backpack becomes a pencil case, a quilt becomes one patchwork square.
- The rice hand warmer needs three rules said out loud: uncooked rice only, nothing scented, and it is never heated at school. Heating happens at home, 30 seconds maximum, with an adult, and the display card says so. A student with a rice sensitivity uses dried beans or flax.
- The permission note matters. A cut-up jacket that belonged to somebody's grandmother is a phone call you do not want. No signed note, no cutting, no exceptions, and the scrap bin means no student is punished by the rule.
- *[Sal: your students respond to a real user. Push every brief past "for me" to a named person, a little brother, a grandmother, a coach, the classroom. The ones who name a person finish.]*
- Budget note for the unit plan: this lesson costs nothing if the bin and the drive work. Thread, needles, and pins are already in the Topic 5.2 budget. The only new items are the rice for the hand warmers (a two-pound bag, about $2 [update]) and cord or shoelaces for drawstring bags (about $4 for a spool of cotton cord [update]).